REMARKS

I. Introduction.

Claims 14, 16-26, 38 and 39 are currently pending in this Application, of which claims 14 and 21 are independent. Applicant respectfully submits that all pending claims are in condition for allowance.

II. Rejections under 35 U.S.C. §103(a).

Claims 21, 22, 26, and 39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,358,467 to Mordue (*"Mordue'467"*). Claims 14, 17 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent 5,154,652 to Ecklesdafer (*"Ecklesdafer"*). Claims 21, 22 and 26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,451,247 to Mordue et al. (*"Mordue'247"*). Claims 14, 17, 19, 21 and 26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,303,074 to Cooper (*"Cooper'074"*). Claims 15, 16, 18, 20, 23, 24 and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over either of *Mordue '247* or *Cooper'074* as applied to claims 14 and 21, in view of U.S. Patent 3,400,923 to Howie et al. ("*Howie*"). Applicant respectfully submits that none of the cited references (alone or in combination) disclose each and every limitation of the rejected claims as currently amended.

A. "Bore" and "Coupling."

As discussed in the previous response, both independent claims 14 and 21 recite that it is the bore through the coupling that has proximal and distal ends, wherein the distal end of the bore is tapered and is not threaded. Each of the rejections under 35 U.S.C §103, however, argues that the reference (or references) discloses a "coupling with proximal and distal ends, where the distal end [of the coupling] is tapered and not threaded." Likewise, the "Response to Arguments" section of the Office Action states that "the outer portions of the bores are parts of the bore also." Office Action, page 5.

Applicant respectfully submits that the bore is, clearly and unambiguously, an opening through the interior of the coupling and thus does not include the outer surface of the coupling as the Office Action contends. As shown for an exemplary embodiment of the present invention, depicted in Figure 12 of the Application, the bore 1208 through the coupling member 1200 has a tapered portion 1212. The tapered portion 1212 of the bore 1208 is separated from the external surface of the coupling 1200 by the thickness of the walls of the coupling 1200 itself. The

tapered portion of the bore is entirely separate and distinct from the external surface of the coupling. The external surface of the coupling could, therefore, have any shape and configuration while not affecting the shape and configuration of the bore.

As discussed below, the bores through the couplings in *Ecklesdafer, Mordue '247,* and *Cooper '074, Mordue '467* do not have a bore with a tapered, unthreaded distal end as recited in claims 14 and 21. Instead, as described below, it is only the external surfaces of these couplings that are tapered. Accordingly, none of the cited references (alone or in combination) disclose or suggest a bore through a coupling that has a distal end that is tapered and not threaded, and therefore cannot render the claimed invention obvious.

B. Reliance on MPEP 2144.04(IV)(B).

In each of the rejections of independent claims 14 and 21 under 35 U.S.C. §103, the Office Action does not cite any reference that discloses or suggests the limitation of a bore having a tapered, unthreaded distal end, nor does the Office Action explain why one of skill in the art would be motivated to modify any of the cited references to include this limitation. Instead, the Office Action simply concludes that this limitation would be obvious modification to *Mordue '467, Ecklesdafer, Mordue '247,* and *Cooper '074. See, e.g.*, Office Action, page 2 ("motivation to alter the bore shape of Mordue '467 to any other equally useful bore shape would have been a modification obvious to one of ordinary skill in the art at the time the invention was made").

In support of this contention, the Office Action cites to MPEP 2144.04(IV)(B), which contains a single case (*In re Dailey*) and a parenthetical summarizing its holding that states: "the configuration of the claimed disposable nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant."

It is settled that "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l v. Teleflex*, 82 USPQ2d 1385 at 1396 (2007). Additionally, it is improper to rely on *per se* rules of obviousness. *In re Ochiai*, 71 F.3d 1565 at 1571 (Fed. Cir. 1995) ("[S]ection 103 requires a fact-intensive comparison of the claimed process with the prior art rather than the mechanical application of

one or another *per se* rule."). Applicants respectfully submit that the rejections under 35 U.S.C. §103 lack the required support to establish a *prima facie* case of obviousness.

Additionally, Section 2144.04 of the MPEP provides the following guidance on relying on legal precedent to support the rationale in obviousness rejections:

> [I]f the facts in a prior legal decision are sufficiently similar to those in an application under examination, the examiner may use the rationale used by the court. Examples directed to various common practices which the court has held normally require only ordinary skill in the art and hence are considered routine expedients are discussed below. If the applicant has demonstrated the criticality of a specific limitation, it would not be appropriate to rely solely on case law as the rationale to support an obviousness rejection. (emphasis added).

Thus, the holding in *In re Dailey* is not a universal ruling that any and all changes in the shape or configuration of a component are mere matters of choice. As set forth below, Applicant respectfully submits that the present Application is distinguishable from the holding in *In re Dailey*.

In the *In re Dailey* case, the Court reviewed the rejection of claims in an application directed to an infant nursing container having a nipple with a slitted opening through which an infant could feed. *In re Dailey*, 357 F.2d 669 (CCPA 1966). The parenthetical in MPEP §2144.04(IV)(B) refers to the Court's affirmation of the rejection of claims 27 and 28, which were dependent upon claim 25. Claim 27 recited "the configuration of the top and bottom sections of the container as that of 'a portion of a sphere less than a hemisphere'." *Id.* at 671. Claim 28 recited that "the central angle of those spherical portions is about 80 degrees." *Id.*

Claims 27 and 28 were rejected as obvious over *Matzen* (U.S. Patent No. 554,071). The device in *Matzen* had two portions, a top rigid portion and a flexible bottom portion that was drawn into the rigid top portion by atmospheric pressure as an infant drew liquid from the container. *See* Id. at 671-672; s*ee also Matzen*, Figures 1, 2, and claim 1. The Court agreed with the board that the limitations in claims 27 and 28 of the Dailey application regarding the top and bottom sections of the container were a "mere matter of choice" and not "significant" to the operation of the nursing container. *In re Dailey* at 672.

While the top and bottom sections of the nursing container in *In re Dailey* were not significant to its operation, the tapered, unthreaded distal end of the bore through the coupling recited in the present claims provides a number of significant functions. As set forth in ¶17 and ¶67 of the Application, the tapered, unthreaded distal end of the bore in the coupling assists in

(among other things) centering the shaft, facilitating the easy assembly/disassembly of the shaft from the coupling, and helping to prevent gas leaks (thereby leading to longer component life). Applicant respectfully submits that these advantages establish the significance of the tapered, unthreaded distal end of the bore, and distinguish the facts of this case from those of the top and bottom sections of the nursing container in *In re Dailey*, which were not significant to the container's operation.

For the reasons set forth above, Applicant respectfully submits that *In re Dailey* is inapplicable to the facts here, and that the present invention as claimed is patentable.

C. Mordue '467.

Claims 21, 22, 26, and 39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,358,467 to Mordue ("*Mordue'467"*). The portion of *Mordue '467* cited by the Office Action does not disclose or suggest each and every limitation of independent claim 21. In particular, the coupling 44 does not disclose or suggest a bore with a distal end that is tapered and not threaded, and a proximal end that is threaded. To the contrary, the coupling 44 has a cylindrical cavity 52 of uniform diameter that immediately transitions to a smaller diameter in gas passage 58, but does not taper as does the bore in the claimed invention. *See Mordue '467*, figure 4A. As discussed above in Section A, the shape and configuration of the bore through the coupling is entirely separate from the shape and configuration of the external surface of the coupling.

Accordingly, Applicant respectfully submits that independent claim 21 is not obvious over *Mordue '467*. The remaining rejected claims (i.e., claims 22, 26, and 39) are each dependent upon claim 21 and are allowable for the same reasons as set forth above.

D. Ecklesdafer.

Claims 14, 17 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent 5,154,652 to Ecklesdafer ("*Ecklesdafer"*). The drive shaft coupling cited by the Office Action in *Ecklesdafer* is for "releasably joining two abuting sections of a drive shaft such as used to drive an inboard power boat." Abstract. The Office Action contends that the coupling 3 in *Ecklesdafer* includes a bore with a distal end that is tapered and not threaded and that could be employed for transferring gas (Office Action, page 4). Applicant respectfully disagrees. The coupling in *Ecklesdafer* is formed from "two identical halves (3, 4)" that hold an "internally positioned sleeve (12)" and that form "a rigid joint between the main shaft (1) and the tail shaft

(2)." Col. 2, lines 30-34. The coupling 3 uses mounting bolts 5 to interface with grooves (9, 10) in the shafts to "form a lock to keep the main shaft (1) and the tail shaft (2) contained within the coupling." Col. 2, lines 57-60. The two halves of the coupling (3, 4) are held together with mounting screws (5, 11). It is unclear, and the Office Action does not explain, how gas could be transferred through the coupling without leaking through the multiple screw holes in the coupling or through the joints between the two halves of the coupling. *See* Fig 2 and 3A.

Additionally, *Ecklesdafer* does not disclose or suggest that any portion of the bore through the coupling is "tapered" as recited in independent claim 14. To the contrary, the figures and specification of *Ecklesdafer* suggest that shafts 1 and 2 (as well as the sleeve 12 through which shafts 1 and 2 are disposed) are the same diameter through the entire length of the coupling. *See e.g.*, Figs. 3A-5. Since the stated purpose of the coupling is to "drive a propeller shaft while maintaining correct relative position both radially and axially between the drive shaft and propeller shaft" (col. 1, lines 11-13, emphasis added) both shafts (1, 2) must be of the same diameter to have the same radial position and to turn at the same speed.

Additionally, no portion of *Ecklesdafer* discloses or even suggests that the bore through the coupling 3 includes an end that is threaded as required by claim 14. As such, Applicant respectfully submits that independent claim 14 is not obvious over *Ecklesdafer*. The remaining rejected claims (i.e., claims 17 and 19) are each dependent upon claim 14 and are believed to be allowable for the same reasons as set forth above.

E. Mordue '247.

Claims 21, 22 and 26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,451,247 to Mordue et al. (*"Mordue'247"*). The portion of *Mordue '247*, cited by the Office Action does not disclose or suggest each and every limitation of independent claim 21. In particular, while the outer wall of the coupling 21 is tapered, no portion of *Mordue '247* discloses or suggests that the coupling 21 has a bore that is tapered.

Additionally, Applicant notes the coupling 21 cited by the Office Action in Figures 1 and 2 is part of a molten metal transfer pump 1, not a degasser. Col. 4, lines 26-27. The shaft 19 depicted in Figures 1 and 2 is solid, and as such is not a rotor shaft that includes a passage therethrough as required by independent claim 21. Only one small portion of *Mordue '247* alludes to the modification of the shaft for degassing: "the degassing embodiment would most likely include a bore through the rod – or a sufficient gap between the sheath and the rod – to

facilitate introduction of a reaction gas or other suitable agent." Col. 6, lines 64-67. *Mordue '247* does not describe how its molten metal pump 1 would be modified to utilize such a shaft for degassing (nor how gas would be provided through the rod), much less explain how the rod with the bore through it would be coupled to the motor 17 using coupling 21 without allowing gas to leak from the coupling. Applicant therefore submits that *Mordue '247* cannot reasonably be said to disclose a rotary degasser that includes a rotor shaft with a passage through the shaft as recited by independent claim 21.

Applicant therefore submits that independent claim 21 is not obvious over *Mordue '247* because it lacks at least the claimed limitations. The remaining rejected claims (i.e., claims 22, and 26) are each dependent upon claim 21 and are believed to be allowable for the same reasons set forth above.

F. Cooper '074.

Claims 14, 17, 19, 21, 22 and 26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,303,074 to Cooper (*"Cooper'074"*). The coupling 38 in *Cooper '074* does not include a bore that is tapered at the distal end as recited in claims 14 and 21, rather it is the outer wall of the coupling 38 that is tapered. Additionally, with regards to independent claim 14, the coupling 38 in *Cooper '074* does not include a bore with a distal end that is tapered and not threaded, and a proximal end that is threaded. To the contrary, *Cooper '074* states: "[p]referably, coupling 38 and first end 42 of rotor shaft 40 are connected without the use of connecting threads." Col. 3, lines 52-54.

Applicant therefore submits that independent claims 14 and 21 are not obvious over Cooper '074. The remaining rejected claims (i.e., claims 17, 19, 22, and 26) are each dependent upon either claim 14 or 21 and are believed to be allowable for the same reasons set forth above.

G. Mordue '247 or Cooper '074 in View of Howie.

Claims 15, 16, 18, 20, 23, 24 and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over either of *Mordue '247* or *Cooper'074* as applied to claims 14 and 21, in view of U.S. Patent 3,400,923 to Howie et al. ("*Howie*"). As discussed above in Sections II.E and II.F, neither *Mordue '247* nor *Cooper '074* disclose or suggest each and every limitation of independent claims 14 or 21. *Howie* (alone or in combination with *Mordue '247* or *Cooper '074*) likewise does not disclose the limitations of claims 14 and 21.

Howie pertains to "the removal and separation of dross from molten aluminum." Col. 1, lines 15-16. No portion of *Howie* discloses or suggests using the "decomposer 1" of *Howie* for transferring gas, nor is it clear how it could be modified to do so. The device in *Howie* includes "a rotatable member 51, which includes a cylindrical male thread 63 that engages with a female threaded portion of vertical shaft 66. Thus, the device in *Howie* does not disclose a coupling member with a bore as recited in claims 14 and 21, rather the two shafts (51 and 66) are simply screwed together. In addition to lacking a coupling member, neither shaft 51 or 66 includes a bore as required by claim 21.

Applicant therefore submits that independent claims 14 and 21 are not obvious over *Cooper '074* or *Mordue '247* in view of *Howie*. The remaining rejected claims (i.e., claims 15, 16, 18, 20, 23, 24, and 25) are each dependent upon either claim 14 or 21 and are believed to be allowable for the same reasons set forth above.

CONCLUSION

Reconsideration is respectfully requested. Applicant respectfully submits that this case is in condition for allowance and respectfully requests withdrawal of the rejections and allowance of the pending claims.

The Examiner is invited to telephone the undersigned at the telephone number listed below if it would in any way advance prosecution of this case.

Respectfully submitted,

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